

## REMARKS

### Objection to the Specification

The Examiner objected to the use of "--" to offset the phrase "a single molecule of peptidoglycan on the first page of the Specification. Applicant herein submits a replacement first page wherein the "--" are deleted and a single comma is inserted after the word "polymer".

Applicant also notes that a typographical error was made in Applicant's first amendment of the first page whereby the filing date of U.S. Provisional Application 60/087,308 was stated as May 29, 1999. That application was filed in 1998. The date is corrected in the first page provided herein. A redline showing the changes is provided for the Examiner's reference.

### Rejections under 35 USC 102(e)

Claims 1-3, 5-6 remain rejected under 102(e) in view of Hoskins US 5,834,270. (Action paragraphs 10-13). Applicant respectfully traverses.

Applicant believes that much of the rejection is not properly stated because the Examiner argued terms and limitations that do not appear in the claims. For instance, the Examiner stated that the Hoskins reference presented a nucleic acid sequence "meeting the definitions of the instant specification" (Action paragraph 12, first sentence). Applicant respectfully requests comparisons of the cited references to limitations recited in the claims.

Claim 1 has been amended to recite that the polynucleotide encodes a polypeptide having "the" amino acid sequence of SEQ ID NO: 2, not "an" amino acid sequence of SEQ ID NO:2. Claims 2 and 3 have been cancelled.

In view of the amendments presented herein, Applicant see the rejection under 35 USC 102(e), in view of Hoskins, as moot, and respectfully requests withdrawal of the rejection.

Claims 1-7 remain rejected under 102(e) in view of Rubenfield US 6,551,795. (Action paragraphs 14-15). Applicant respectfully traverses.

Claims 1 has been amended as described above. Claims 2 & 3 have been cancelled. Claim 4 has been amended as described for Claim 1. Claim 7 has been amended to remove the references to a "MurD protein of *Pseudomonas aeruginosa*". Applicant notes that while local sequence similarity is present, SEQ ID NO:1 is not identical to any sequence in Rubenfield.

In view of the amendments and remarks presented herein, Applicant respectfully requests withdrawal of the stated rejections.

Rejection under 35 USC 112, second paragraph

Claims 1-7 were rejected for indefiniteness. Applicant will address each rejection in turn.

The claims were rejected over the recitation of “fully complementary” in Claim 1 in view of the reference to “an” amino acid sequence in Claims 1 and 4. Claims 1 & 4 have been amended to recite “the amino acid sequence”, not “an” amino acid sequence, of SEQ ID NO:2. In view of these amendments, Applicant believes there is no longer an issue of the meaning of “fully complementary”.

Claims 2 & 3 are cancelled. Applicant sees the rejections stated against Claims 2 and 3 as moot.

Claim 6 was rejected over the article “a”. Claim 6 is amended as suggested by the Examiner.

Claim 7 was rejected over the recitation of “MurD” and a lack of antecedent for “protein”. Applicant has amended Claim 7 to remove those recitations and to recite “polypeptide of SEQ ID NO:2” in their place. Claim 7 was also rejected over the recitation of “suitable”. That term has been deleted from Claim 7.

In view of the amendments and remarks presented herein, Applicant respectfully requests withdrawal of the stated rejections.

TELEPHONE INTERVIEW

If the Examiner believes that a brief telephone interview would advance the prosecution of this application, the Examiner is invited to telephone Applicant’s undersigned attorney at the Examiner’s convenience.

CONDITIONAL PETITION

Applicant hereby makes a Conditional Petition for any relief available to correct any defect in connection with this filing, or any defect remaining in this application after this filing. The Commissioner is authorized to charge deposit account 13-2755 for the petition fee and any other fee(s) required to effect this Conditional Petition.

Respectfully submitted,

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## ANNOTATED SHOWING CHANGES

## TITLE OF THE INVENTION

MURD PROTEIN AND GENE OF *PSEUDOMONAS AERUGINOSA*

## CROSS-REFERENCE TO RELATED APPLICATIONS

- 5                    This application claims the benefit of U.S. Provisional Application 60/087,308, filed May 29, ~~1998~~1999, now abandoned, and is a 371 of PCT Application US99/11585, filed May 26, 1999.

## FIELD OF THE INVENTION

- 10                   This invention relates to the genes and enzymes involved in cell wall synthesis in bacteria, and particularly to the inhibition of such enzymes.

## BACKGROUND OF THE INVENTION

- 15                   The molecular target of many naturally-occurring antibiotics, including fosfomycin, cycloserine and  $\beta$ -lactams, is the synthesis of the bacterial cell wall. The frequency with which these types of antibiotics arose in evolution indicates that the pathway of cell wall biosynthesis is a particularly effective point of attack against bacteria. Genetic studies confirm the soundness of this process as a target, as temperature-sensitive alleles of the intracellular pathway genes are lytic, and therefore
- 20                   lethal. Since the building blocks of the cell wall are highly conserved structures in both Gram-positive and Gram-negative bacteria, but are unique to the eubacteria, novel inhibitors of cell wall formation are expected to be both broad spectrum and safe antibiotics.

- 25                   The bacterial cell wall is a polymer<sub>1</sub>[[--]] a single molecule composed of peptidoglycan[[--]] that defines the boundary and shape of the cell. Assembled by crosslinking glycan chains with short peptide bridges (Rogers, H. J., H. R. Perkins, and J. B. Ward, 1980, Biosynthesis of peptidoglycan. p. 239-297. In Microbial cell walls and membranes. Chapman & Hall Ltd. London), the completed structure is strong enough to maintain cell integrity against an osmotic pressure differential of
- 30                   over four atmospheres, but also flexible enough to allow the cell to move, grow and divide.